

### Polyethyleneimine Assisted Control of Aspect Ratio of ZnO Nanorods in Solution

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As compare to 0-dimensional and 2-dimensional nanostructures, one-dimensional (1D) nanostructures are the focus of extensive research because of their unique importance in the fundamental studies and versatile applications in various nanodevices. ZnO-based nanostructures such as nanorods have attracted much interest in recent years because of their use as building blocks for future optical, electrical or piezoelectric devices. Owing to its importance in various applications, high aspect ratio ZnO nanorods were grown on ZnO seed layer deposited glass, silicon and polyimide substrates by solution process at low-temperature using zinc nitrate hexahydrate, and hexamethylenetetramine. We studied the effect of polyethyleneimine (PEI) on the growth of ZnO nanorods. It was found that PEI has a prominent effect on controlling the aspect ratio of ZnO nanorods in terms of precursors concentration, and synthesis temperature (60–90 °C). The morphological and photoluminescence properties of the ZnO nanorods were also examined with varying the growth temperature.